AE 90H

200-Channel-Scanner

Owner's Manual

Albrecht®

Kommunikationstechnik aus Norddeutschland

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INTRODUCTION

Your new AE90H Programmable Scanner lets you in on all the action! This scanner gives you direct access to over 35,000 frequencies. You can store frequencies in your scanner's 200 channels, and you can change your selections at any time.

It incorporates a custom-designed microprocessor – a tiny, built-in computer which gives your scanner these special features:

Superscan – lets you search through frequencies at up to 50 steps per second or scan stored channels at 25 channels per second.

Ten Channel-Storage Banks – let you group your stored frequencies so you can easily identify calls.

Liquid Crystal Display – shows the selected channel and frequency.

Two Second Scan Delay – helps prevent the loss of replies on a channel while you are scanning.

Memory Backup – keeps the channel frequencies stored in your scanner's memory for up to 1 hour without the battery.

Lockout Function – makes your scanner skip over specified channels.

Priority Channel – helps keep you from missing important calls on the selected priority channel.

Monitor Banks – let you save up to ten channels located during a frequency search.

Your AE90H covers the following bands:

68-88 MHz VHF Lo

108-136.975 MHz Aircraft (AM)

137-144 MHz Government

144-148 MHz 2 Meter Ham Band

148-174 MHz VHF Hi

380-450 MHz Ham Radio and Government

450-470 MHz UHF Lo

470-512 MHz UHF TV

806-960 MHz UHF Hi

Avoid using your scanner in close proximity to a Radio or TV receiver to prevent unwanted interference.

PREPARATION

Power Sources

You can power your scanner from one of the following three sources:

* Internal batteries
* Your vehicle's battery (using an optional DC adaptor)
* Standard AC power (using an optional AC adaptor)

Using Internal Batteries

The AE90H requires six AA batteries for power. For longest battery life and optimum performance, we recommend alkaline batteries. Or you can use rechargeable nickel-cadmium batteries. On a single charge, the rechargeable batteries do not last as long as alkaline batteries, but you can use the rechargeable batteries again and again.

Caution: AE90H has a built-in charging circuit that lets you recharge nickel-cadmium batteries inside the scanner. However, you must not use this circuit when non-rechargeable batteries are installed in the scanner. Be sure to read "Using an External Power Source" and "Charging Tips."

Low Battery Indicator

When the batteries get weak, B flashes on the display and a beep sounds. You should immediately replace all six batteries. Or, if you are using rechargeable nickel-cadmium batteries, you should recharge all six batteries.

External power supplies

You can power your AE90H from the mains supply using an AC adaptor. A regulated 9V unit is recommended. Alternatively it can be used from the car's cigar lighter with a 9V – (negative) earth adaptor.

Note: If you have fitted nickel-cadmium batteries (rechargeable) you can connect the adaptor to the CHG socket. This will operate the scanner and re-charge the batteries.

Charging Tips

Rechargeable lead-acid batteries, such as your car battery, work better and last longer if you keep them fully charged all the time. However, nickel-cadmium batteries, such as those you use in this scanner, react in the opposite way. They last longer and deliver more power if you occasionally let them fully discharge. To do this, simply use the scanner until the low battery indicator appears in the display. Then fully charge the battery.

Using an External Power Source

Before you connect any adaptor to the scanner, it is very important that you understand the purpose of the scanner's PWR and CHG jacks. Improper use of the jacks can damage the scanner and the power adaptor.

The PWR jack supplies power to operate the scanner and disconnects the internal batteries. You can use this jack with an external power source regardless of what kind of batteries are installed in the scanner.

The CHG jack supplies power to operate the scanner, and it also sends power to the internal batteries to recharge them. Use the CHG jack only when you have installed nickel-cadmium batteries in the scanner.

Warning: Never use the CHG jack when non-rechargeable batteries (standard, extra-life, or alkaline) are installed in the scanner. If you attempt to charge the non-rechargeable battereis, they get hot and can even explode.

Resetting the Scanner

If the scanner's display locks up or does not work properly after you install new batteries or after you connect an external power source, you might have to reset the scanner's display or initialize the scanner.

To reset the display:

1. Turn on the scanner.
2. Press the reset switch at the right of the PWR jack using a pointed object, such as a straightened paper clip. If this is not effective, initialize the scanner as directed below.

Caution: Use the following procedure only when you are sure the scanner is not working properly. This procedure clears all information you have programmed into the scanner.

To initialize the scanner:

1. Turn on the scanner.
2. Press and hold **CLEAR** and then press the reset switch at the right of the PWR jack using a pointed object, such as a straightened paper clip. Release **CLEAR** after the display reappears.

Connecting the Antenna

Plug the antenna into the socket ANT on top of your AE90H and lock into position with the clamp ring. To improve performance and increase sensitivity an external static aerial can be used. This must have a 50 ohm co-axial feeder with BNC type connector.

Connecting an Earphone

For private listening, plug an earphone into the earphone jack on the top of your scanner. This automatically disconnects the speaker. In a noisy environment, mono headphones make listening easier.

Connecting an Extension Speaker

In a noisy area, an extension speaker can provide more comfortable listening. Plug the speaker cable's 3.5mm mini-plug into the scanner's earphone jack.

KEYBOARD FUNCTIONS AND LIQUID CRYSTAL DISPLAY

All the keyboard functions are indicated on the LCD.

Numbered Keys – Each key has a channel number followed by a range of numbers which indicate the channels to make up a storage bank. (10 groups of 20 channels each).

You can store up to 210 frequencies in the AE90H memory bank, 200 into a permanent memory (CHANNEL), 10 into a temporary memory (MONITOR).

SCAN – allows you to scan through the programmed channels.

MANUAL – lets you enter a channel number directly.

CLEAR – Press to clear an incorrect entry.

KEYLOCK – Disables the keypad except "SCAN/MANUAL/LIGHT."

L/OUT – Enables you to switch on or off the lockout function.

DELAY – Switches the delay function on and off.

MON – Access the 10 monitor memories.

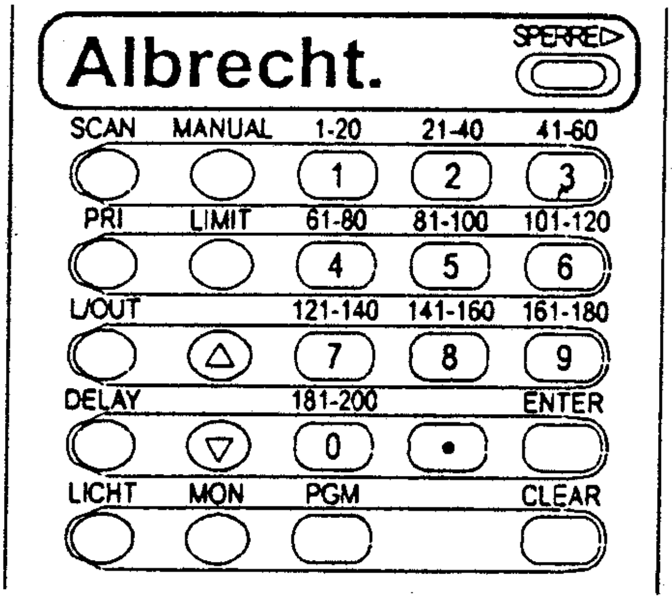
PRI – priority ON/OFF feature.

PGM – To program frequencies into channels.

ENTER – To lock programmed frequencies into channels.

LIMIT – V and Λ for frequency searching.

LIGHT – Turns backlight on for the display.



OPERATION

Setting the Volume and Squelch

Rotate VOLUME clockwise and SQUELCH counterclockwise until you hear a hissing sound. Then slowly rotate SQUELCH clockwise until the noise stops. Leave VOLUME set to a comfortable level.

If the scanner picks up unwanted weak transmission, rotate SQUELCH clockwise to decrease the scanner's sensitivity to these signals.

USING THE KEYLOCK

Once you program your scanner, you can protect it from accidental program changes by setting KEYLOCK to LOCK. In this position, the only controls that operate are SCAN, MANUAL, LIGHT, VOLUME and SQUELCH.

When you want to charge the scanner's programming, set KEYLOCK to KEY.

PROGRAMMING THE SCANNER

Follow these steps to store frequencies in channels.

1. Select a channel to program by pressing MANUAL, entering the channel number you want to programme, and pressing PGM.

   PGM appears on the display to indicate that the scanner is in the programming mode.

2. Enter a frequency.

   Refer to "Searching for Active Frequencies" in this manual.

3. Press ENTER to store the frequency.

   If you have made a mistake in Step 2, *Error* appears on the display. Press CLEAR and repeat Step 2.

4. If you want the scanner to pause 2 seconds after each transmission before scanning to the next channel, press DELAY until *DLY* appears on the display.

5. Repeat Steps 1-4 to programme more channels. If you want to programme the next channel in sequence, press PGM and repeat Steps 2-4.

SEARCHING FOR ACTIVE FREQUENCIES

Use these procedures to search for a transmission. This is helpful if you do not have a reference to frequencies in your area.

Note: Press **DELAY** to make the scanner pause 2 seconds after a transmission before proceeding to the next frequency.

Limit Search

This procedure lets you search within a range of frequencies. *-L-* appears on the display during a limit search.

1. Press **PGM**. Then press **LIMIT**.
2. Enter the lower limit of the frequency range.
3. Press **ENTER**. Then press **LIMIT**.
4. Enter the upper limit of the frequency range.
5. Press **ENTER**.
6. Press **V** to search down from the upper limit. Or, press **Λ** to search up from the lower limit.
7. When the scanner stops on a transmission, press **MON** to store the frequency in the current monitor memory. The bar under the memory number stops flashing. Or, press **Λ** or **V** to continue the search.

Direct Search

When you are listening to a channel, you can search up or down from the current displayed frequency. *-d-* appears in the display during a direct search.

1. Press **MANUAL** and the channel number to select a channel in which you have programmed a frequency. Then press **MANUAL** or **PGM**.
2. Press **Λ** to search up from the channel's frequency or press **V** to search down.
3. When the scanner stops on a transmission, you can store that frequency in the current monitor memory by pressing **MON**.

As you store frequencies in monitor memories, the bar under the memory number indicates the current monitor memory. You can listen to monitor memories by pressing **MANUAL**, **MON** and then the number for the monitor memory you want to listen to.

MOVING A FREQUENCY FROM MONITOR MEMORY TO A CHANNEL

To move a frequency from a monitor memory to a channel memory, follow these steps.

1. Press MANUAL. Enter the channel number you want to store the monitor frequency in, and then press PGM.
2. Press MON and enter the monitor memory number that has the frequency you want to store.
3. Press ENTER. The scanner stores the monitor frequency in the channel.

If you want to return to a limit search after this procedure, press LIMIT and either Λ or V to continue.

Scanning the Channels

To begin scanning, press SCAN. The scanner scans through all non-locked channels in the activated banks. Set SQUELCH so you do not hear the hissing sound between transmissions.

Be sure to read the following sections to get the full benefits from all of your scanner's special features.

Locking Out Channels

You can increase the effective scanning speed by locking out channels that you have programmed. Manually select the channel and press L/OUT until *L/O* appears on the display. This is also handy for locking out channels that have a continuous transmission. You can still manually select locked-out channels.

To unlock a channel, manually select the channel and press L/OUT until *L/O* disappears from the display.

Note: There must be at least one active channel in each bank. You cannot lock out all channels.

Turning Banks On and Off

The scanner splits the 200 channels into ten banks of 20 channels each. The small bars under the numbers at the top of the display are the bank indicators.

You can turn each bank on and off. When you turn off a bank, the scanner does not scan any channel in the bank. While scanning, press the number key corresponding to the bank you want to turn on or off. If the memory bank indicator is on, the bank is turned on and the scanner scans all channels within that bank that are not locked out. If the indicator is off, the scanner does not scan any of the channels within that bank.

You can manually select any channel in a bank, even if the bank is turned off. You cannot turn off all banks. One bank is always active.

Using the Priority Feature

You can scan through the programmed channels, and still not miss an important or interesting call on a specific channel. Just programme the channel as the priority and turn on the priority feature by pressing PRI during scanning. The scanner now checks the priority channel every two seconds, and stays on the channel if there is activity.

To programme a channel as the priority channel, press PGM, the desired channel number and then press PRI. *P* appears in the upper left corner of the display whenever the scanner is set to the priority channel. You can only select one channel as the priority channel.

To turn off the priority feature, press PRI again until *PRI* disappears from the display.

Manually Selecting a Channel

You can monitor a channel without scanning. This is useful if you hear an emergency broadcast on a channel and do not want to miss any details – even though there might be periods of silence – or if you want to monitor a locked-out channel.

To select a channel, press MANUAL, enter the channel number, and press MANUAL again. Or, if the scanner is scanning and stops at the desired channel, press MANUAL one time. Pressing MANUAL additional times makes the scanner step through the channels.

Battery-Saving Feature

Your scanner has a special battery-saving feature. When you have manually selected a channel, if the scanner does not detect a signal within 5 seconds and you do not press a key, the scanner enters the standby mode. In this mode the scanner rests for 1 second and then checks for a signal for 1/4 second. The scanner continues doing this until you press a button or it receives a signal. During standby, the scanner uses only 30 percent of the normal power consumption.

SPECIFICATIONS

Frequency Coverage:

VHF-Lo .... 68-88MHz (in 5kHz steps)
Aircraft .... 108-136.975MHz (in 25kHz steps)
Government .... 137-144MHz (in 5kHz steps)
Ham .... 144-148MHz (in 5kHz steps)
VHF-Hi .... 148-174MHz (in 5kHz steps)
Ham/Government .... 380-450MHz (in 12.5kHz steps)
UHF-Lo .... 450-470MHz (in 12.5kHz steps)
UHF-TV .... 470-512MHz (in 12.5kHz steps)
UHF-Hi .... 806-960MHz (in 12.5kHz steps)
Channels of Operation .... Any 200 channels in any band combinations (20 channels x 10 banks) and 10 monitor channels

Sensitivity (20dB Signal-to-noise ratio):

68-88MHz 1.0μV
108-136.975MHz 2.0μV
137-174MHz 1.0μV
380-512MHz 1.0μV
806-960MHz 2.0μV

Spurious rejection:

68-88MHz .... 50dB at 78MHz
108-136.975MHz .... 50dB at 124MHz
137-174MHz .... 50dB at 154MHz
380-512MHz .... Not specified
806-960MHz .... Not specified

Selectivity:

+/-10kHz .... -6dB
+/-20kHz .... -50dB

IF rejection:

10.7MHz .... 50dB at 154MHz

Scanning rate 25channels/sec
Search rate .... 50 steps/sec
Priority sampling .... 2 seconds
Delay time .... 2 seconds
IF frequencies .... 10.7MHz and 455kHz
Filters .... 1 Crystal filter, 1 ceramic filter

Squelch sensitivity:

Threshold .... Less than 1.0µV
Tight (VHF-Lo, Hi, UHF) .... (S+N)/N 25dB
Tight (Aircraft) .... (S+N)/N 20dB

Antenna impedance 50-ohms
Audio power .... 200mW nominal
Built-in speaker .... 36mm (1 3/8") 8-ohm, dynamic type
Power requirements .... +9VDC, 6AA batteries
or a suitable adaptor (negative ground only)
Current drain (squelched) 40mA
Operating temperature ...... 14°F to 140°F (-10°C to +60°C)
Storage temperature....... -40°F to +160°F (-20°C to +71°C)
Dimensions (H x W x D) .... 145 x 58 x 42 mm
(5 3/4 x 2 3/4 x 1 5/8 inches)
Weight .... approx. 250g (8.8oz.)
(without antenna and batteries)